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# “Give Less but Give Smart”: Experimental Evidence on the Effects of Public Information about Quality on Giving\*

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## Abstract

We conduct a laboratory experiment to test how information about charities’ qualities and its public visibility affect giving. We first show theoretically that a perceived increase in charities’ qualities represents a decrease in the price of charitable output, which could generate both an income and substitution effect on nominal giving. On the one hand positive news about charities’ qualities can increase giving, since donors realize that it is cheaper to generate charitable output. On the other hand positive news can reduce nominal giving because a smaller donation can generate an equal or higher level of charitable output. We then hypothesize and test that such negative income effect may be dominant among image-motivated donors whenever the quality of giving has a social signaling value: donors can “give less, but show that they give smart”. We find that when information is public, 34% of donors trade-off the quality and quantity of their donations. We show that these donors are relatively more motivated by social recognition, and strategically use positive public information to give less. The effect of public information is causal: when information about charities’ qualities is privately received, giving is always increasing in the quality of the news, and bad news has no effect on giving.

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# 1 Introduction

Social image plays a key role in charitable giving decisions: individuals often donate to be publicly recognized, to abide by social norms of generosity, or simply out of sheer social pressure.<sup>1</sup> Given the importance of image motives for giving, charities routinely advertise how much people give – the “quantity” of giving – to increase donations. More recently, it has become equally common to publicly advertise the “quality” of giving – e.g. how donations convert into charitable output – with the goal of increasing donations.<sup>2</sup>

While such beneficial effect is intuitively appealing, in practice little is known about how information on quality and its public visibility affect nominal giving. Yet, charities incur significant costs to produce and disseminate evidence of impact – for instance through randomized controlled trials – or to improve on standardized metrics used by watchdogs to evaluate charities.<sup>3</sup> Understanding the relationship between quality and quantity of giving is therefore crucial for the charitable giving market.

In this paper we hypothesize and test that the effect of quality information on giving is, in fact, nuanced. On the one hand positive news about charities’ qualities may encourage more giving, since the impact of nominal giving increases when donations are perceived to be more effective. On the other hand however, positive news may crowd-out nominal giving because donors could provide an equal (or even higher) level of charitable output with smaller nominal gifts. In particular, when information about quality is public, we hypothesize that donors motivated by social image may use these social signals as an excuse to donate less. Image-motivated donors may trade-off the quantity and quality of their donations – that is – promote a positive social image by showing that they “give little

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<sup>1</sup>See for instance Harbaugh, 1998a, 1998b; Bracha et al., 2009; Andreoni and Bernheim, 2009; Della Vigna et al., 2012.

<sup>2</sup>The number of watchdog organizations and crowdfunding platforms has grown over the years as well as the number of grant-making agencies focusing exclusively on evidence-based charitable programs. Non-profit watchdog organizations monitor charities and provide assessments of their qualities. The type of information offered varies: some organizations, such as GiveWell, offer in-dept analyses of few selected charities. Others have developed synthetic indices used to rate all charities that make their tax returns or IRS Forms 990 available. Charity Navigator, Charity Watch and Give Star are a few examples of the latter category. Crowd-funding platforms allow individuals and non-profits to solicit donations from a large number of people. Some examples of crowdfunding platforms are GlobalGiving, Kiva.org, Razoo, DonorsChoose and Giveforward.

<sup>3</sup>Standardized metrics such as measures of financial health or accountability are imperfect and highly debated, but they nevertheless heavily affect the ratings produced by most independent appraisers and watchdogs. Moreover, a recent survey conducted by Hope Consulting (2013) shows that administrative and financial efficiency constitutes the most demanded piece of information among donors who do research before giving.

but give smart”.

To test the effect of public quality information we conduct a laboratory experiment in which donors make real donations and receive unexpected news about their charities’ efficiency, a characteristics that donors seek and value when making giving decisions (Hope Consulting 2013; Gneezy et al. 2014; Meer 2017).<sup>4</sup> The experiment is divided in two phases, revealed to participants sequentially. In the first phase participants select real charities and decide how much to donate. In a second phase, we elicit in an incentive compatible manner participants’ beliefs about their charities’ efficiency. We then reveal the actual efficiency information and allow donors to revise, if they want to, the giving amounts chosen in the first phase (but not the recipients). Our key manipulation is to vary across treatments whether donation amounts are announced to other participants at the end of the experiment (an information revealed prior the first donation), and whether the efficiency of the chosen charity is also publicly announced (an information revealed only in the second phase). Such information structure allows us to isolate how the social signaling value of quality information affects giving, while controlling for other potentially confounding factors.

We document two main results. First, we find that image motivated donors strategically use public quality information to reduce giving. When the efficiency of donors’ charities has a social signaling value, 34% of donors respond to this new information by *reducing* their giving when charities are better-than expected.<sup>5</sup> Compared to other participants, these image-motivated donors give significantly more when the only social signal available is their nominal contribution (e.g. during phase 1 decisions), but decrease their contributions as soon as a new (costless) positive social signal can be conveyed to others, namely the efficiency of their charities. One explanation is that the *cost of looking pro-social* decreases when positive public information can be conveyed to peers, encouraging strategic substitution between quality and quantity of giving.

The causal and negative effect of public information on nominal giving is corroborated by our second set of results: we find that when positive information about charities’ efficiency is received privately, 18% of donors modify their giving in response to this new information, but such change is always increasing in the quality of news.<sup>6</sup> Overall, we find that when information has no social signaling value, the majority of donors do not modify

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<sup>4</sup>See section 4.2 for a discussion about the limitations of measures of financial efficiency.

<sup>5</sup>And marginally *increasing* giving when news is worse-than-expected.

<sup>6</sup>We also find little to no response in terms of giving to negative private news.

their giving in response to information, a behavior consistent with donors deriving utility from the act of giving itself (e.g. warm-glow).

This paper provides first evidence of how publicly disclosed information about quality impacts giving, and shows that its unintended effects on generosity causally depend on its social signaling value. With our experimental parameters, we do not find evidence of a negative effect of information per se. Yet, we cannot exclude that for larger levels of giving, quality improvements may instead reduce nominal giving, even when information is privately received. This may be the case for wealthier donors, who tend to be more responsive to quality considerations (Levin et al., 2016). A simple analogy: if we assume leisure is a normal good, then wage increases generate a negative income effect on labor supply, which may offset the positive substitution effect for high enough wages.

Such observation highlights the need to generalize the rapport between quality and quantity of giving beyond our experimental paradigm. We make a small step in this direction in section 3, where we develop a simple framework that generalizes how the quality of giving can affect different types of donors. Our experiment only directly tests its social image component, but we hope that it will nevertheless be a useful tool for future research.

The remainder of the paper is organized as follows. Section 2 provides an short overview of the existing literature on the role of social signaling and information in giving. Section 3 outlines our simple framework of charitable giving under private and public information about quality. Section 4 provides details about our experimental design, and discusses some advantages and pitfalls of using charities' efficiency as a proxy for actual impact on charitable output. Section 5 details our results, and section 6 concludes.

## 2 Background

Individuals give to charity for a variety of reasons. People may give out of pure altruism (Andreoni, 1988), or because they derive a direct utility from giving (Becker, 1974).<sup>7</sup>

One important class of impure motives for giving revolves around people's preferences for holding a positive social image. Individuals donate to increase their social prestige

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<sup>7</sup>Several impure motives for giving have been identified in the literature; for instance internalized norms (Arrow and Hahn, 1971; North, 1981), social approval (Hollander, 1990), warm-glow (Andreoni, 1990; Ribar and Wilhelm, 2002; Harbaugh et al., 2007), conditional cooperation (e.g. Fischbacher et al., 2001), reciprocity (e.g. Sugden, 1984). Donors' generosity also depends on the cost of giving (Andreoni and Miller, 2003; Karlan and List, 2007).

(Harbaugh, 1998a, 1998b; Bracha et al., 2009). The possibility of direct and indirect social approval increases individual contributions (Andreoni and Petrie, 2004; Rege and Telle, 2004;), and so does social pressure (Della Vigna et al., 2012; Andreoni et al., 2017).<sup>8</sup> Similarly, social influence and imitation play an important role in giving decisions (List and Lucking-Reiley, 2002; Shang and Croson, 2009; Vesterlund, 2003; Potters et al., 2007; Bracha et al., 2011), and social-signaling has been found to be a stronger motivation than self-signaling (Grossman, 2010). Existing research focuses mostly on the social visibility of donations, and the social visibility of the cost of giving (Benabou and Tirole, 2006; Ariely et al., 2009); yet, the social visibility of charities' performances has become increasingly important for charities and donors alike.

There is a relative small but growing literature exploring donors' demand for information about charities' performances.<sup>9</sup> Fong and Oberholzer-Gee (2011) use real individual recipients and costly information to show that about one third of their subjects is willing to pay to gather information about potential recipients and target their preferred. Brown et al. (2016) show in a laboratory experiment that third-party ratings do impact donors' choice of charities, but with no obvious preference for local charities. Karlan and Wood (2016) randomize in a field experiment whether donors of a charity receive evidence-based information about impact, finding that information has a zero average treatment effect, but induces lower (higher) future donations among small (large) donors. Null (2011) finds that donors tend to allocate gifts among different charities even when this means reducing social surplus. Exley (2015) shows that when the impact of donations is risky, donors use such risk as an excuse not to give. Chlaß et al. (2015) explore how donors respond to the presence of intermediaries that could reduce charitable output, finding that 41% of donors reduce giving when intermediaries are present, while 59% give as much or more. Butera and Houser (2018) find that donors who are unwilling to pay for quality information are nevertheless willing to delegate their giving decisions to better-informed agents, showing that charitable intermediaries can increase overall effective giving. Our paper complements this literature by studying how positive and negative news about quality affect giving, and how public information affects image-motivated donors.

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<sup>8</sup>While social visibility often increases giving, some studies have shown that individuals who are averse to both positive and negative reputation tend to conform toward the average contribution, resulting in a reduction in giving whenever others give less on average (Jones and Linardi, 2014).

<sup>9</sup>For empirical evidence on the effects of identification versus information on the recipient see Small and Loewenstein (2003), Fong(2007), and Eckel et al. (2007).

### 3 The effect of information on giving

In this section we develop an intentionally simple framework to characterize the relationship between quality and quantity of giving. We begin by observing that an increase in the quality of a charity can be considered as a reduction in the effective cost of giving, or the cost of producing one unit of effective charitable output (see Eckel and Grossman, 1996). The core intuition behind our setup is that changes in quality will have both a substitution and income effect on nominal donations whenever effective charitable output affects donors' utility.

Formally, we assume that (perceived) charities' characteristics and qualities can be summarized by a unique parameter  $q \in [0; \bar{Q}]$ . We also assume that the charitable output produced by any given charity, call it  $\Omega$ , is a function of quality  $q$  and nominal donations  $G = g_i + G_{-i}$  received from donor  $i$  and other donors  $-i$ . For simplicity, we assume that this production function  $\Omega$  takes the form  $\Omega = q \cdot G$ . Note that  $\Delta q$  can be interpreted either as a subjectively perceived change in quality, or an objective change in quality.<sup>10</sup> We also assume that donors have a fixed endowment of money  $M$  that they allocate between private goods consumption  $c$ , and public goods production  $g$  (e.g. charitable giving). Under this setup, the effect of (possibly perceived) increases in quality depends on whether donors' utility is affected by the actual charitable output  $\Omega = q \cdot G$  produced, or only by their nominal donations  $g$ .

We consider three cases. First, we consider donors who only care about the well-being of the final recipient regardless of who produces it, as would be the case for pure altruist donors (Becker 1974). We then consider donors whose utility is only affected by their own contributions  $g$ , as for warm glow donors (Andreoni 1990). Finally, we discuss the effect of changes in quality on giving from donors motivated by social image.

**Pure altruist donors:** Pure altruists give to charity to increase the welfare of recipients (Becker 1974). Pure altruists' utility is therefore affected by the total amount of charitable output produced  $\Omega = q \cdot G$ , regardless of who donates it, and private consumption  $c$ . The utility can then be characterized by  $U_i(c, \Omega) = U_i(c, q \cdot (g_i + G_{-i}))$ , where  $G_{-i}$  represents giving from other donors. We assume that donors have additive utility over private consumption and giving ( $U'_{cg} = 0$ ), and that  $U$  is strictly increasing and concave. The maximization problem then takes the following form:

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<sup>10</sup> Notice also that when  $q < 1$ , a one dollar donation generates less than a dollar of charitable output.



$$\begin{aligned} \max U_i(c, q \cdot G) &= U_i(c, q \cdot (g_i + G_{-i})) \\ \text{s.t. } M &= c + g \end{aligned} \tag{1}$$

We assume that the equilibrium is an interior solution,  $g_i^* > 0$ , that donors are homogeneous, and we fix other donors' response to changes in  $q$ , that is, we assume  $\frac{\partial G_{-i}}{\partial q} = 0$ .<sup>11</sup>

At the interior optimal level of giving  $g^*$ , the marginal benefit of an extra unit of charitable output  $\omega$  equals the marginal cost:

$$q \cdot U'_g(c, q \cdot (g_i + G_{-i})) = U'_c(c, q \cdot (g_i + G_{-i})) \tag{2}$$

Under this simple setup, a positive (perceived) change in the production technology of charitable output produces both a substitution and an income effect: on the one hand nominal giving increases since charitable output has become cheaper to produce (substitution effect). On the other, the marginal benefit of nominal giving decreases since, all else equal, a smaller nominal donation can generate an equal or higher level of charitable output (income effect). Depending on the relative strengths of these effects, overall giving may increase or decrease.<sup>12</sup>

To see this, suppose that perceived quality  $q$  increases by 1%. Such increase shifts upwards the curve  $q \cdot U'_g(c, q \cdot (g_i + G_{-i}))$  by 1% (the substitution effect). The 1% increase in  $q$  also increases  $q \cdot g$  (the charitable output) by 1% at any given level of  $g$  (remember we assumed  $\frac{\partial G_{-i}}{\partial q} = 0$ ). The 1% increase of  $q \cdot g$  however decreases  $U'_g(c, q \cdot (g_i + G_{-i}))$ , the marginal benefit of nominal giving, since  $U$  is concave. The magnitude of this income effect depends on the curvature of the utility function, or how elastic the marginal benefit on nominal giving is to changes in nominal giving. This elasticity, call it  $\lambda$ , can be calculated as follows:

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<sup>11</sup> We make the latter assumption for the following reason: under Nash equilibrium conjectures, donors take other people's giving  $G_{-i}$  as exogenous (Andreoni 1989). This is true also in our context for any given level of  $q$ . When  $q$  varies however, other donors' equilibrium giving  $G_{-i}^*$  clearly will vary with  $q$ , since other donors too will adjust their giving to changes in quality  $q$ . By assuming that donors are homogeneous, we are implicitly assuming then other donors' equilibrium response to changes in quality ( $\frac{\partial G_{-i}}{\partial q}$ ) will affect the *magnitude* of the individual giving response to changes in quality,  $\frac{\partial g_i}{\partial q}$ , but not its *sign*. Since we are interested in the direction of the effect of  $q$  on  $g_i$ , but not in its magnitude, we ignore the magnitude effect of other donors' adjustments to  $q$ .

<sup>12</sup>Giving may decrease also if donors target specific welfare outputs, such as helping a given number of children; this behavior is similar in spirit to what observed by Camerer et al. (1997) for taxi drivers pursuing daily income targets.

$$\lambda = -\epsilon_{U'_g(\cdot),g} = \frac{\partial u'_g}{\partial g} \cdot \frac{g}{u'_g} = -\frac{u''_{gg}}{u'_g} \cdot g \quad (3)$$

Overall thus, a 1% increase in perceived quality  $q$  will shift  $q \cdot U'_g(c, q \cdot (g_i + G_{-i}))$  by  $(1 - \lambda)$  percent. If  $\lambda < 1$ , then the substitution effect will dominate the income effect, and viceversa if  $\lambda > 1$ . Figure 1, provides a visual representation of how  $\lambda$  affects the new giving equilibrium.<sup>13</sup> We derive the same results using a different analytic approach in appendix B. We consider next the case of warm-glow donors.

**Warm-glow donors:** Warm-glow donors derive utility from the act of giving itself, rather than from the charitable output their giving generates (Andreoni, 1990). Their utility therefore only depends on their private consumption  $c$  and nominal donation  $g$ , and therefore  $U = U_i(c, g_i)$ . It is immediate to see that a change in perceived quality  $q$  has no effect on giving. We finally consider image-motivated donors.

**Social image donors:** Donors who give to look good to others receive a private return from giving in the form of social image (Harbaugh, 1998a; 1998b; Bracha et al., 2009; Della Vigna et al., 2012; Name-Correa and Yildirim, 2016). When giving is motivated purely by image, donors' response to quality information depends on whether nominal giving  $g$ , or charitable output  $\Omega$  affect donors' social image.

Suppose that nominal donations were the only public signal visible to others: in this case donors would only care about nominal giving and their preferences will look like those of warm-glow givers. Because in this case quality  $q$  does not impact donors' social image, changes in the quality of giving would have no effect on donations.

On the other hand, if both the quality  $q$  and the quantity  $g$  were to affect social image, then image motivated donors would behave *as if* they cared about charitable output  $\Omega$ .<sup>14</sup> In this case, improvements in quality would generate both an income and substitution effect: on the one hand giving may increase because more charitable output  $\Omega$  – and therefore social image – could be generated with larger donations. On the other hand image motivated donors could take advantage of positive social signals about quality to reduce their nominal giving: they could give less but show that they are giving *effectively*.

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<sup>13</sup>We adapt the representation and analysis approach of Chetty (2006) to a giving environment.

<sup>14</sup>This is true also for different production functions of  $\Omega$ , granted that donors understand that the quality of giving contributes to the production of effective output.

This is because the marginal (image) benefit from nominal giving decreases as quality  $q$  increases.

If the substitution effect is larger than the income effect, then an increase in quality would increase giving. This could be the case if both past and current donations were visible to others, that is, if variations in giving amounts  $\Delta g$  carried a reputational value. In this case publicly reducing giving in response to positive public news would have a negative impact on image, encouraging therefore similar or larger donations. For instance, think of donors whose close peers might remember or monitor their previous contributions.

By contrast, if the substitution effect is smaller than the income effect, then increases in quality would depress giving. This could happen for instance if previous donations were not publicly visible, or if  $\Omega$  was visible but not its inputs  $g$  and  $q$ .

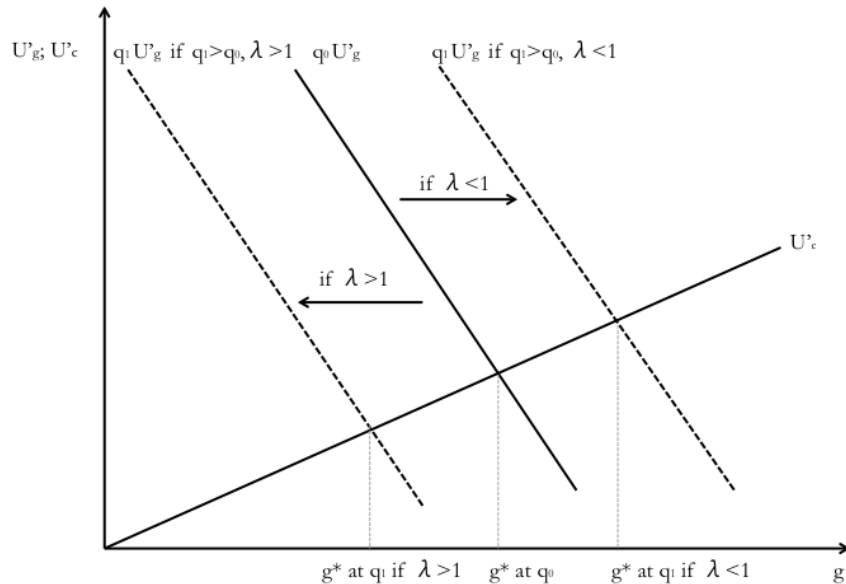
The latter case is the one that informed our design, since commonly charities do advertise current gifts from donors but do not publicly recall past contributions in new fundraising cycles.

Formally, call  $\chi_q = \{0; 1\}$  a binary variable defining whether quality is visible or not to others, and  $I$  as an increasing and concave image function; we can then characterize social image donors' function as follows:

$$U_i = \chi_q I(c, q \cdot (g_i + G_{-i})) + (1 - \chi_q) \cdot I_i(c, g_i) \quad (4)$$

When  $\chi_q = 1$ , the effect of the information on giving is similar to the pure altruism case, that is, image motivated donors would act *as if* they cared about output  $\Omega$ . They would then face a trade-off: on the one hand an increase in  $q$  increases the marginal image return from an extra unit of charitable output; on the other, a higher or equal level of charitable output, and therefore of social image, can be achieved with a lower nominal donation. When  $\chi_q = 0$  instead, only  $g$  is visible, and therefore image motivated donors behave like warm-glow givers.

Figure 1: The effect of information on giving from pure altruist donors or social image donors



Note: Figure 1 shows giving decisions of a pure altruist donor (or an image motivated donor when both  $q$  and  $g$  are publicly visible) at two different quality levels of a charity ( $q_0$  and  $q_1$ , with  $q_1 > q_0$ ) assuming that utility is quasi-linear. The upward sloping curve  $u'_c$  represents the marginal cost (or opportunity cost) of an extra unit of nominal giving. The downward sloping solid curve represents the marginal benefit of one extra unit of charitable output,  $q \cdot U'_g$  at the initial level of quality  $q_0$ . The optimal level of nominal giving  $g^*$  is determined by the intersection of these curves. The two dashed curves represent the shift of  $q \cdot U'_g$  in response to a change in quality from  $q_0$  to  $q_1$  under two different cases: the upper curve represents a shift corresponding to the case in which the substitution effect dominates the income effect (i.e.  $\lambda < 1$ ). In this case an increase in quality increases giving. The lower dashed curve depicts the new equilibrium when the income effect dominates the substitution effect (i.e.  $\lambda > 1$ ). In this case an increase in quality decreases giving.

## 4 Experiment design

The goal of our experiment is to isolate the effect of public information on nominal giving. We therefore designed three treatments to separate (i) the social signaling value of information, (ii) the effect of information per se, and (iii) the pure effect of having an audience. In all treatments, the experiment consists of two phases, with the second phase disclosed to subjects only at the end of the first phase. In the first phase of all treatments, subjects

choose three charities from a large list of real charities.<sup>15</sup> Subjects choose how to split their endowment between themselves and each of the three charities, knowing that only one split (and thus one charity) is randomly selected for final implementation. In the second phase we elicit subjects' beliefs about their charities' efficiency. We then provide new information about their charities' actual efficiency and allow to modify the initial decisions. One of three decisions from the second and last phase is randomly selected for payments. Subjects and the selected charity are paid accordingly.

Each of our three treatments follow the two aforementioned phases. Treatments differ in whether the final donation implemented is publicly revealed at the end of the experiment, and whether the quality information each subject receives is publicly revealed at the end of the experiment. In all treatments the name of the randomly chosen charity is never revealed to other participants, nor to the experimenter.<sup>16</sup> The name and personal information of all subjects are also never revealed.

In our baseline treatment T0, donation amounts and quality information are private. This baseline treatment allows us to control for whether quality information itself generates a dominant negative income effect on giving.

In treatment T1, subjects are required to stand up at the end of the experiment and announce how much they donated to the randomly chosen charity, but quality information remains private. Treatment T1 allows us to control for whether response to information is driven by the mere presence of an audience.

Finally, in treatment T2 subjects are required to stand up at the end of the experiment and announce both the amount donated and the information received in the second phase about that final charity. Subjects in T1 and T2 are explicitly told that the name of the charity may never be revealed.

The timing of information disclosure is a critical feature of our design. At the beginning of the first phase, participants learn whether their donation decision will be private or will be publicly revealed. At the beginning of the second phase, participants learn whether the efficiency of the randomly chosen charity will be private or publicly revealed. Note

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<sup>15</sup>We chose to give a large list of charities to increase the chances that participants could select a charity they actually cared about, increasing thus the external validity of the experiment. The interface works like traditional web search engines, allowing subjects to narrow their search with each keystroke, a so-called "fuzzy matching". This interface made it easy for subjects to search and browse for charities.

<sup>16</sup>Because some charities in the list were religious or had a defined political orientation, we decided to guarantee anonymity of chosen charities to increase the likelihood that subjects chose their truly desired charities and donation amounts.

that decisions in the first phase are fully comparable across treatments T1 and T2, since in both treatments the information set is the same: subjects only know that the donation to the randomly selected charity will be publicly revealed, but are unaware of the second phase, and therefore that further information will be received. Section 4.1 briefly details the experimental procedure.

#### 4.1 Detailed experimental procedure

Subjects receive 25 experimental dollars (E\$), equivalent to US\$17, and are presented with a web-based search database of approximately 5,400 charitable organizations rated by the charity watchdog Charity Navigator (CN). Subjects are asked to select three charities from the database and to rate their familiarity with, and attitude toward each charity. After completing a comprehension quiz, subjects decide how to split their initial endowment of E\$25 between themselves and each charity separately. Any integer donation between E\$0 and E\$25 is allowed. Participants know that the three decisions are independent, since at the end of the experiment only one decision is randomly selected for actual payments. Before the beginning of the first phase, subjects in treatments T1 and T2 are informed that the donation amount to the randomly-implemented charity will be publicly revealed at the end of the experiment.<sup>17</sup>

At the end of the first phase, subjects are informed that a second and last phase begins, and that they will receive additional information about the charities they chose. They are told that after information is received, they will be able to modify, if they want to, their decisions from the first phase. We explain that this second set of decisions is the only one that will be considered for final payments.<sup>18</sup>

Subjects are then provided with explanations and examples about a single, homogenized measure used by Charity Navigator to rate charities called "program expenses".<sup>19</sup> Program expenses is the ratio of dollars spent on fundraising and administrative expenses. After a quick comprehension quiz about Charity Navigator's mission and the interpretation of

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<sup>17</sup>Subjects are given the possibility to increase the probability that one of the three charities is implemented by indicating one charity as favorite. Subjects know that if no favorite is indicated, each decision stands a one in three chance of being implemented (Pr. = 33.3%). However, conditional on a favorite being chosen, that favorite charity stands an increased chance of being implemented of two in three (Pr. = 66.6%).

<sup>18</sup>Note that there is no deception involved in the experiment, since all decisions made in the first phase are still part of the action set in the second phase. Moreover, decisions made in the first phase are never revealed to anyone, meaning that others never learn whether a subject's final decision is different from the decision made in the first phase.

<sup>19</sup>See Charity Navigator's website, section "How Do We Rate Charities' Financial Health?"

the efficiency measure, we elicit subjects' beliefs about the actual program expenses ratio for each of their charities.<sup>20</sup> Participants are told that after this beliefs' elicitation phase, they would learn the actual efficiency of each charity, and if their guess is within +/- 5% from the true value they would receive additional E\$6. We remind subjects in T1 and T2 that the donation amount they allocated to the final (phase 2) randomly-implemented charity will be publicly revealed at the end of the experiment, and subjects in T2 are informed that the program expenses rating of the randomly-selected charity will also be revealed. Subjects in T0 are reminded that all giving decisions and information will be kept private. At the end of the experiment, subjects in T0 are called one by one and paid by a third person not related to the experiment. In T1, subjects are asked to stand up and announce in front of other participants how much they donated to their final charity, and are then paid in private. Finally, subjects in T2 are asked to stand up and announce in front of other participants how much they donated to their final charity, and announce the efficiency rating. Participants are then paid in private.<sup>21</sup>

## 4.2 Discussion about measures of financial efficiency

Measures of financial health and efficiency represent an imperfect way to assess how well charities serve their mission, and have been criticized by many economists and practitioners. Administrative and fundraising costs are fixed costs that are necessary for any charity to capture economies of scale (Perroni et al. 2014), and there is evidence that an excessive focus on overhead costs induces charities to under-invest in critical assets, such as skilled personnel (Meer 2017).

Yet, donors appear to highly value such information and to consider it as a proxy for charities' quality. A survey from Hope Consulting (2013) finds that overhead costs constitute the most demanded piece of information among donors who do research before giving, and Meer (2017) reports a recent survey from Grey Matter Research finding that nearly two thirds of Americans believe that charities spend too much on overhead costs. Gneezy et al. (2014) show in a field experiment that fundraising outcomes can be dramatically

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<sup>20</sup>We also elicited confidence in their beliefs by asking to provide the likelihood that the true ratio falls within each of five quintiles.

<sup>21</sup>We recruited 99 subjects from George Mason University. The mean age was 22.25, with about 54% of men and 46% of women; 70% of subjects took at least one course in Economics (with 57% having taken more than 2 courses). 67.4% of subjects declared to have donated money at least once in the last year (any sum to anyone), 69.8% to have volunteered, and 12% to have tithed. Data were collected using pencil-and-paper, but subjects used a computerized search interface for part of the experiment.

improved by merely framing a large seed donation as a contribution that already covered all overheads, further confirming that donors dislike thinking that their own donations are used for overheads.

The focus of our paper is to assess how giving is affected by changes in attributes that are perceived as proxies for charities' qualities. We therefore chose to focus on this single aspect of non-profits' activities. While an increase in charities' efficiency represents a *perceived* increase in quality, we do not claim that higher financial efficiency necessarily equates to higher charitable output.

## 5 Results

We organize our results as follows: we first provide summary statistics on overall giving, and provide evidence that subjects across treatments are comparable in terms of types of charities chosen, beliefs about efficiency, and the actual efficiency of their charities. We then combine subjects' beliefs and actual efficiency to examine how the quality of information (good/bad news) affects donors' decisions across treatments. For our analysis we will assume that subjects receive good news when charities' efficiency is better-than-expected, and receive bad news otherwise.

### 5.1 Summary statistics

Table 1 presents descriptive statistics of average giving in each phase (in E\$), percentage of subjects indicating a favorite charity, and beliefs and real values of charities' efficiency across our three treatments.<sup>22</sup>

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<sup>22</sup>Unless mentioned otherwise, all p-values from pairwise comparisons come from two-sided Wilcoxon-Mann-Whitney tests or Wilcoxon matched-pairs signed-rank tests. For trend comparisons of three treatments, p-values come from two-sided Jonckheere-Terpstra tests.



Table 1: Summary Statistics

Summary Statistics	T0	T1	T2
Donation Phase 1	8.86 (8.18)	10.3 (7.88)	8.84 (7.92)
Donation Phase 2	9.45 (8.48)	10.49 (8.24)	8.86 (8.23)
Choose Favorite in Phase 1	66% (0.47)	78% (0.41)	70% (0.46)
Choose Favorite in Phase 2	62% (0.48)	85% (0.35)	77% (0.42)
Efficiency Beliefs	68.93 (18.07)	74.15 (11.39)	68.98 (18.13)
Real Efficiency	79.5 (15.14)	82.34 (8.41)	80.04 (13.63)
N. of observations	81	84	132

*Note:* Table 1 reports summary statistics for the three treatments.

Participants gave on average E\$ 9.25 in phase 1, and E\$ 9.48 in phase 2, leaving average final earnings of US\$17 (including show up fee). 16.8% of subjects donated zero in phase 1, and 17% donated zero in phase 2. Donations were not significantly different across treatments in either phase 1 ( $p=0.724$ ) or phase 2 ( $p=0.392$ ), and the average difference in giving between phases is not different across treatments ( $p=0.282$ ).<sup>23</sup>

We show next that beliefs about quality and actual quality are fully comparable both within and between treatments. Across all three treatments, subjects chose similarly efficient charities: the average efficiency is 80.5% (s.d. 12.85), and between-treatment averages are not significantly different ( $p=0.792$ ). Further, we do not find evidence that some subjects systematically chose significantly skewed charities in terms of efficiency, both within and across each treatment. We draw the same conclusion for participants' guesses across and within treatments.<sup>24</sup> To compare beliefs across treatments one additional check is

<sup>23</sup>Giving in T1 is directionally larger than T0, but statistically insignificant ( $p=0.565$ ). This is somewhat surprising given that people often donate more when giving amounts are public. One explanation is that in this experimental literature individuals donate only to one charity while in our experiment participants give to multiple charities, potentially generating larger standard errors. If we take individual average contributions, then the difference between T0 and T1 remains statistically insignificant but much closer to conventional statistical significance levels ( $p=0.158$ ).

<sup>24</sup>In table A.1 (appendix A) we reports results from OLS regressions where we compare beliefs about

needed: unlike T0 and T1, in treatment T2 participants’ beliefs are elicited while knowing that the true efficiency will be revealed to others, and this may introduce a bias. We cannot reject the hypothesis that subjects in T2 formed their beliefs as participants in T0 and T1 do ( $p = 0.459$ ). Finally, average beliefs’ errors are not significantly different across treatments ( $p = 0.839$ ).

Taken together, these results show that participants received the same proportion of good and bad news across treatments (i.e. difference between beliefs and real values). Therefore our results cannot be driven by systematic differences in the quality of information or beliefs across treatments. Table 2 shows the proportion of good and bad news received in each treatment.<sup>25</sup>

Table 2: Proportion of good/bad news received by treatment

	<b>Good News</b>	<b>Bad News</b>	<b>Total</b>
<i>T0</i>	60 (74.07%)	21 (25.93%)	81 (100%)
<i>T1</i>	64 (76.19%)	20 (23.81%)	84 (100%)
<i>T2</i>	102 (77.27%)	30 (22.73%)	132 (100%)

*Note:* Table 2 reports the proportion of good news (guess  $\leq$  actual efficiency) and bad news (guess  $>$  actual efficiency) by treatment.

Table 3 reports, for each treatment, the distribution of subjects’ chosen charities by sector of activity. We cannot reject the hypothesis that the distribution of sectors is the same across treatments ( $p = 0.476$ ). This is important because unobserved characteristics of specific charitable causes could have confounded our analysis. The same conclusion can be drawn if we break down sectors into sub-sectors of activity ( $p = 0.577$ ).<sup>26</sup>

quality, actual quality and type of news across subjects, treatments and their interaction. All coefficients from OLS regressions are not statistically significant.

<sup>25</sup>One referee astutely noticed that optimists would be more likely to receive bad news, while pessimists would be more likely to receive good news. Since we did not collect data about people’s generalized views of the world, we cannot say whether the type of news participants received is the result of their generalized optimism/pessimism, or simply the product of their specific beliefs about charities’ efficiency. The identification of the specific mechanism through which beliefs were formed does not impact our identification of social image concerns, but it is nevertheless a very interesting avenue for future research.

<sup>26</sup>These categories are the ones used by Charity Navigator. These categories are never presented to

Table 3: Distribution of chosen charities across sectors, by treatment

Treatments	T0	T1	T2
	n. (%)	n. (%)	n. (%)
Animals	7 (8.7%)	10 (11.9%)	11 (8.3%)
Arts, Culture, Humanities	7 (8.7%)	4 (4.7%)	5 (3.7%)
Education	6 (7.4%)	5 (5.9%)	10 (7.5%)
Environment	5 (6.1%)	3 (3.5%)	3 (2.2%)
Health	19 (23.4%)	16 (19%)	34 (25.7%)
Human Services	12 (14.8%)	15 (17.8%)	26 (19.6%)
International	13 (16%)	15 (17.8%)	22 (16.6%)
Public Benefit	9 (11.2%)	10 (11.9%)	18 (13.6%)
Religion	3 (3.7%)	6 (7.1%)	3 (2.3%)
Total	81 (100%)	84 (100%)	132 (100%)

We finally report on the choice of a favorite charity. Most participants chose to indicate a favorite in both phase 1 (71% of subjects) and phase 2 (75.7%). The percentage of subjects choosing a favorite in phase 1 is not different across all three treatments ( $p=0.921$ ), as well as when we compare treatment T0 with T1 and T2 pooled together ( $p=0.672$ ).<sup>27</sup> For choices in phase 2, we find that the number of participants choosing to indicate a favorite charity in phase 2 increases as we move from T0 to T1 to T2 (Jonckheere Terpstra test,  $p=0.070$ ). Moving from T0 to T1 to T2, subjects also change their favorite charity more often between phases ( $p=0.001$ ). Switching is always in favor of a more efficient charity (for treatments T0, T1, T2,  $p=0.142$ ,  $p=0.043$ ,  $p=0.026$  respectively).<sup>28</sup>

## 5.2 The effect of good and bad news on donations

We have shown that participants' donations, beliefs about quality, and actual quality are comparable across treatments. We can now analyze how the subjective quality of news, the objective value of efficiency, and its social visibility affect giving.

As a reminder, we define *news* as the difference between an individual belief about the efficiency of a given charity and its actual value. We assume that donors whose beliefs are

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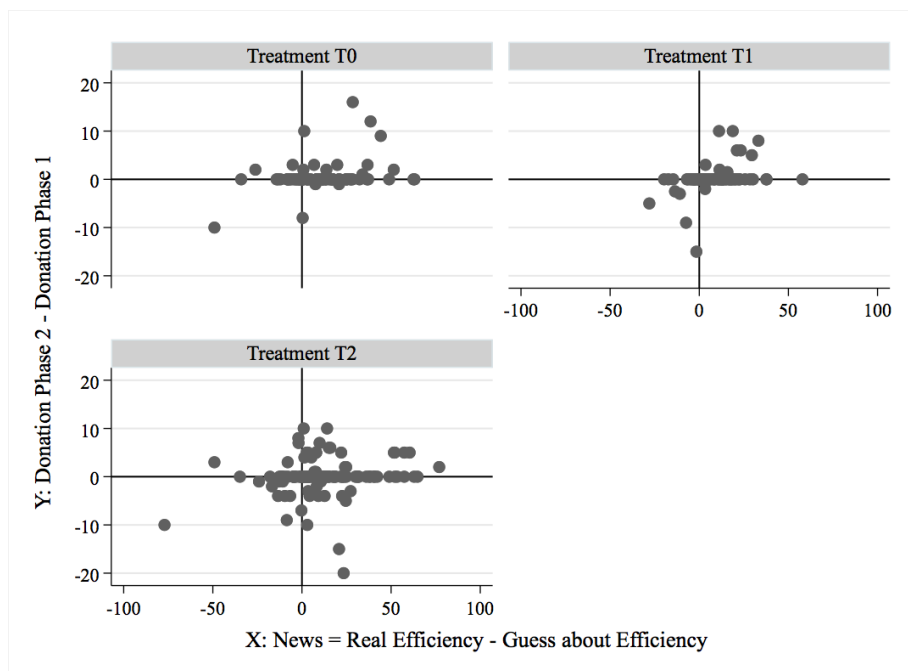
participants at any point during the experiment. See table A.2 in Appendix A for a list of categories and the number of charities chosen in each category by treatment. For the full list of charities selected by participants see Table A.3.

<sup>27</sup>The same holds if we test pairwise comparisons.

<sup>28</sup>We obtain the same result comparing the real efficiency of all charities with the real efficiency of charities selected as favorite in round 2.

lower than the real value receive good news, and donors whose guess is higher than the real value receive bad news. Figure 2 provides a scatter plot of the relationship between changes in donations between phases (donation made in phase 2 minus donation made in phase 1) and the type (and intensity) of news received in phase 2 (difference between real values of efficiency and subjects' guesses).

Figure 2: Changes in donations across phases by type of news



*Note:* Table 2 provides a scatter plot of the relationship between changes in donations across phases and the type of news received. Positive news are represented by positive values, while negative news by negative values. Each dot represents one observation.

The public visibility of charities' efficiency has a tangible effect on donors' behavior. Noticeably, in treatments where information is conveyed privately (T0 and T1), good news always (weakly) increase giving. By contrast, when information about efficiency is public (T2), a significant fraction of subjects reduce their donations after receiving good news. As a preliminary test for the effect of social image on giving, we estimate the following linear model with panel-level random effects:

$$G2_{ij} = \mathbf{x}_{ij}\beta + \mathbf{z}_{ij}\gamma + \nu_i + \epsilon_{ij} \quad (5)$$

where our dependent variable  $G2_{ij}$  represents the transfer made by subject  $i$  to charity  $j$  in phase 2 of the experiment as a function of (i) a vector of charities' characteristics, individual giving decisions, and individual giving decisions interacted with their social visibility,  $\mathbf{x}_{ij}$ , and (ii) a vector of demographic controls  $\mathbf{z}_{ij}$ .<sup>29</sup> We control for a set of individual characteristics and survey questions,  $\mathbf{z}_{ij}$ , including age, GPA, number of Economics classes attended, personal and family opinions on charity  $j$ , general pro-social habits, and general attitudes towards risk.

Table 4 reports estimates from a random-effects Tobit regression.<sup>30</sup> The results point to three important observations: First, donations made in phase 2 are significantly higher in treatments where some, or all relevant information is revealed to others (Public Treatments,  $p=0.077$ ). Second, all else constant, donors increase their giving in response to increases in the news about their charities (News,  $p=0.000$ ; Efficiency,  $p=0.387$ ). Third, controlling for news effect, donors *reduce* their giving when information about efficiency is revealed to others ( $p=0.029$ ), and the (average) news received for the two other charities has no significant effect on giving ( $p=0.432$ ). In addition, favorite charities receive significantly larger donations only in our public treatments ( $p=0.327$  for the whole sample, and  $p=0.032$  for T1 and T2).<sup>31</sup>

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<sup>29</sup>We assume random effects  $\nu_i$  are i.i.d.,  $N(0, \sigma_\nu^2)$ , and  $\epsilon_{ij}$  are i.i.d.  $N(0, \sigma_\epsilon^2)$  independently of  $\nu_i$ .

<sup>30</sup>As 29% of our observations are potentially censored, we opted for a Tobit model with censoring at both zero and twenty-five E\$. In addition, we used the same specification to run two fixed and random-effects GLS models (not reported here), whose parameter estimates are not statistically different one from each other (Hausman test,  $p=0.267$ ).

<sup>31</sup>Further, only few personal characteristics have a significant, positive effect on giving in phase 2 (reported as controls in table 4, see table note for full list). These include: the perceived importance of the charity ( $p=0.051$ ); the reported GPA ( $p=0.009$ ); having tithed in the last year ( $p=0.007$ ); and (only marginally) the self-reported willingness to take risks in life ( $p=0.088$ ). Having taken economics courses negatively affects giving ( $p=0.041$ ).

Table 4: The effect of news and efficiency's visibility on giving

Dependent Variable	Donation phase 2
Model	Tobit
Public Treatments (0=T0;1=T1+T2)	5.753* (3.258)
Donation phase 1	1.166*** (0.070)
Donation phase 1 x Public Treatments	-0.068 (0.071)
News (Real Eff. - Guess)	0.067*** (0.017)
Real Efficiency	0.028 (0.033)
Real Efficiency x T2	-0.087** (0.040)
Average News Other 2 Charities	-0.139 (0.177)
Favorite Phase 2 (0=No;1=Yes)	0.704 (0.719)
Favorite Phase 2 x Public Treatments	2.213** (1.033)
Controls	YES
Constant	-4.580 (2.799)
Observations	297
Number of subjects	99

*Note:* Table 4 reports estimates from a random-effects Tobit regression. Controls include the following demographic characteristics: age; current GPA; whether the subject has ever taken an Economics course and if so, how many; whether the subject has donated, tithed, or volunteered in the previous year (0=No;1=Yes); whether the subject's family has donated to the charity in the previous year (0=No;1=Yes). Controls also includes the following self-reported information: importance and knowledge of the charity for the donor and for his family (likert scale); perception of how important luck in life is, and whether people get what they deserve (both on scale 1 to 11); self-reported risk attitudes (scale 1 to 11). \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

To better understand the negative effect of public information on giving we turn to non-parametric analysis.

**Result 1:** *When information about quality has a social signalling value, image-motivated donors tradeoff quality and quantity of giving.*

When the efficiency of the final charity is public information (treatment T2), we observe two major changes relative to when quality is private information (treatment T0 and T1).

First, many more donors (39%) modify their giving in T2 in response to new information relative to donors in T0 (18.5%) and in T1 (21%), and such increase across treatments is statistically significant ( $p=0.001$ ).

Second, and most importantly, while giving in T0 and T1 is always increasing in the quality of the news, the public visibility of information erodes this relationship: in T2, 12 out of 33 (36%) changes in giving observed after good news is received are actually decreased donations, and 4 out of 14 (28.5%) changes in giving after bad news is received are increased donations.<sup>32</sup>

To investigate the reason for these differences, we divide donors from T2 in two groups: in one group we place all subjects that have at least one decreased donation after good news, or one increased donation after a bad news (the behavior absent from T0 and T1). For simplicity we call these decisions “deviant” observations. In the second group, we place all “non-deviant” subjects from T2.<sup>33</sup> Table 5 presents summary statistics of our main variables of interest for the these two groups, and reports differences across groups in the last column.

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<sup>32</sup>This corresponds to the results shown earlier: our Tobit model indicates that in T2 for each one percentage point increase in real efficiency there is a E\$ 0.087 drop ( $p=0.029$ ) in donations in phase 2.

<sup>33</sup>Our analysis is robust to categorizing as deviant subjects who have two deviant observations, instead of one.

Table 5: Summary Statistics for T2's deviant and non-deviant observations

Summary Statistics	Non Deviant Group	Deviant Group	Z-stat (WMW Test)
Donation Phase 1	8.208 (8.505)	10.527 (5.886)	-2.288**
Donation Phase 2	8.708 (8.752)	9.277 (6.755)	-0.946
Donation Phase 2 (Favorite)	9.869 (9.299)	12 (7.469)	-0.831
Donation Phase 2 (non-Favorites)	8.342 (8.607)	8.08 (6.197)	-0.518
Efficiency Guess	68.103 (18.708)	71.319 (16.523)	-0.880
Real Efficiency	80.027 (14.009)	80.063 (12.756)	0.222
News (Real Efficiency - Guess)	11.923 (21.965)	8.744 (20.080)	0.779
News for Phase 1 favorite charity	6.352 (28.062)	5.800 (11.146)	0.169
News for Phase 2 favorite charity	11.895 (20.520)	11.6 (17.128)	-0.534
N. Good News (min=0;max=3)	2.437 (0.792)	2 (1.014)	2.343**
% Choosing a Favorite in Phase 2	23.9% (0.429)	30.5% (0.467)	-0.769

*Note:* s.d. in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 5 shows that the two groups receive on average the same composition of good and bad news ( $p=0.179$ ).<sup>34</sup> Since most of the "deviant" observations are observed when good news is received, this suggests that "deviant" donors are not receiving just good news and

<sup>34</sup>The same conclusion can be drawn using a two-groups proportion test ( $p=0.518$ ).



rewarding the best, causing otherwise efficient charities to experience decreased donations. On the contrary, “deviant” subjects receive on average slightly less good news than “non deviant” subjects (respectively 2 and 2.44,  $p=0.019$ ). We can also reject the hypothesis that subjects hold different beliefs about their charities across the two groups ( $p=0.376$ ). Figure A.1 in Appendix A shows the distribution of good and bad news for the two groups from treatment T2. Information and beliefs are not statistically different across the two groups. We therefore compare donation decisions and choices of a favorite charity.

First, we find that deviant subjects donate significantly more in phase 1 compared to non-deviant subjects ( $p=0.024$ ). The difference in average donations between the two groups however disappears in phase 2 ( $p=0.341$ ). This is because average donations of deviant subjects do not vary from phase 1 to phase 2 ( $p=0.319$ ), while non-deviant subjects increase their donations across phases ( $p=0.015$ ), as it is the case for donors in T0 and T1.

Second, we find that deviant subjects switch their favorite charity more often than non-deviant subjects do ( $p=0.000$ ), and that they always switch toward a more efficient charity. We find however no evidence of hedging across charities.<sup>35</sup>

Together, these results support the hypothesis that deviant subjects are relatively more motivated by social image. The argument is simple: because in phase 1 the only social signal is the donation amount, image-motivated donors donate a larger portion of their endowment relative to donors less concerned about image. However, in phase 2 the quality of giving also becomes a social signal. Image-motivated donors could therefore *substitute* donations for efficiency, increasing their take-home earnings while maintaining social esteem. When news is good thus, the relative *cost of looking pro-social* decreases across phases, generating an income effect stronger than the substitution effect.<sup>36</sup>

**Result 2:** *When efficiency is private information (T0 and T1), good news always (weakly) increase giving. Bad news is mostly ignored.*

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<sup>35</sup>We find that charities not indicated as favorites in phase 2 face a significant reduction in giving across phases ( $p=0.002$ ). However, final donations from deviant subjects to their favorite charities are not statistically different from donations made in phase 1 ( $p=0.119$ ).

<sup>36</sup>An alternative interpretation is that image-motivated donors target a specific charitable output amount to maximize utility, and when efficiency is better than expected, they maintain the size of the target charitable output by decreasing the donation amount (see Camerer et al. 1997). Further, a referee cleverly noted that some of the non-deviant subjects might care about social image as much as deviant subjects, but may believe that others would not “accept the quality excuse”. As we do not elicit second order beliefs about others’ expectation, we cannot test for this possibility. Yet, this possibility would imply that our results are lower bound estimates for the negative income effect.

When donors receive good news and quality is private information (T0 and T1), we find that average donations increase in both T0 ( $p=0.061$ ) and T1 ( $p=0.006$ ). For T0, this result is driven by 18% of subjects who modify their giving, and the average percentage increase in donations is 38%. These represent 13.6% of all subjects in T0. For T1, 16% of the subjects who receive good news increase their donation, with average percentage increase of 21.5%. These represent 12% of all subjects in T1. Notably, no donors in T0 and T1 reduce giving when good news is received, as it is the case when information about quality has a social signaling value (T2). These results suggest that about one in six donors in T0 and T1 have preferences consistent with pure altruism, with a substitution effect stronger than the income effect. This result also shows that most donors do not modify their donations when quality is private information (T0 and T1), a behavior compatible with warm-glow giving.

On the other hand, bad news is mostly ignored in T0 and T1. In T0 both the quality and quantity of giving are private information, and we observe virtually no differences across phases in terms of donation amounts when news is bad ( $p=0.632$ ) (only one subject reduces his giving for one of his charities, or 5% of all bad news observations).<sup>37</sup> For instance, changes in giving after bad news are significantly smaller in T0 than T1 ( $p=0.034$ ).<sup>38</sup> When we look at T1, we do find that receiving bad news is associated with significant reductions in giving ( $p=0.027$ ), but the effect comes from five observations (25% of all bad news observations).<sup>39</sup>

More subjects in T1 respond to bad news relative to T0, but the limited number of bad news observations impedes us to draw sharp inference about these differences. If we take this asymmetry at face value, one possible explanation is that the visibility of the quantity of giving raises the salience of information about efficiency, making subjects sensitive to information that they would otherwise disregard.<sup>40</sup> This would be consistent with the idea that salient negative information has a psychological cost, which is avoided as far as the effort needed to ignore such information is low (Benabou and Tirole, 2002).

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<sup>37</sup>In treatment T0, the average donation in phase 1 before a bad news is 9.3 E\$, and 9.1 E\$ in phase 2 after bad news is received. In treatment T1 is 9.8 E\$ and 8 E\$ respectively; in treatment T2, 12.1 E\$ in phase 1, and 11.4 E\$ in phase 2.

<sup>38</sup>Changes in T0 are directionally different but not statistically significantly different from reductions in T2 ( $p=0.153$ ). This is because, as seen, image-motivated donors in T2 increase giving when bad news is received.

<sup>39</sup>Average reduction in response to bad news is 2.16E\$ (s.d. 3.14), and average increase in response to good news is 1.07E\$ (s.d. 2.64).

<sup>40</sup>For studies on imperfect updating in other areas of decision making see, for instance, Svenson (1981); Eil and Rao (2011); Sharot et al. (2011); Sharot et al. (2012); Mobius, Niederle, Niehaus and Rosenblat (2012).

## 6 Conclusion

We set out to investigate how publicly disclosed news about charities’ qualities affect giving. We first posit that (possibly perceived) changes in charities’ qualities generate both a substitution and income effect: on the one hand increases in quality may increase nominal giving, since it becomes cheaper to generate charitable output (e.g. charities become more effective). On the other hand an increase in quality may crowd-out giving, since donors could provide a higher or equal level of charitable output with lower nominal donations. Then, using a laboratory experiment with treatments that progressively increase the visibility of donation amounts and charities’ qualities, we assess the relative importance of these two forces.

Our data show no evidence of a dominant negative income effect when information is received privately. On the contrary, we find that between 16 and 18% of donors increase their donations when discovering that their charities are better-than-expected. We also find that individuals tend to disregard bad news about their own charities when giving happens under full anonymity. These results also imply that a large portion of donors do not respond to privately received information about charities’ efficiency, a behavior consistent with donors deriving utility from the act of giving itself (warm-glow).

On the other hand, we find that when information has a social signaling value, 34% of donors who change their decisions do so by reducing their donations after receiving good news about their charities’ efficiency, and increasing donations after receiving bad news. We show that this result is driven by individuals who are relatively more motivated by social-image. These donors strategically trade off quantity of giving with quality whenever the latter conveys a new (and costless) positive social signal about one’s giving to others: they “give less, but give smart”.

Our experiment provides an initial datapoint on the interplay between giving and public information about quality of giving. One caveat is that in our experiment the positive or negative valence of information depends on participants’ subjective priors. Future work may look at how donors who are already objectively informed respond to an exogenous informational change. Another caveat is that we only consider changes on the intensive margins of giving, and for a relatively narrow donations’ set. Future work may take advantage of our approach to study the effect of public information on the extensive margins of giving (e.g. new donors), and do so in a field setting where donations’ sets are not exogenously imposed by the experimenter.

Our results suggest that public information changes the relative cost of looking pro-social for image motivated donors. While we find that this effect reduces giving from existing image-motivated donors, it may instead incentivize non-donors to start giving precisely because the presence of public quality information would make looking pro-social affordable.

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## Appendix A

Table A.1: Quality, beliefs about quality, and news across subjects and treatments

	(1)	(2)	(3)
	Actual Efficiency	Beliefs	News
Subject	-0.136 (0.0919)	-0.184 (0.130)	0.0485 (0.129)
Treatment T1	-0.914 (2.134)	2.548 (3.990)	-3.461 (4.311)
Treatment T2	0.230 (4.288)	-0.846 (7.392)	1.076 (8.232)
Treatment T1 X Subject	0.132 (0.0955)	0.128 (0.136)	0.00400 (0.137)
Treatment T2 X Subject	0.0791 (0.120)	0.115 (0.174)	-0.0358 (0.189)
Constant	83.45*** (1.448)	74.29*** (2.956)	9.160*** (3.177)
Observations	297	297	297
R-squared	0.028	0.045	0.008

*Note:* Table A.1 reports coefficient estimates from OLS regressions with standard errors clustered at the individual level. Variable “subject” refer to experimental participants, and variables “Treatment T1” and “Treatment T2” are dummies respectively for treatments T1 and T2.

Table A.2: Number of charities selected in each sub-sector, by treatment

Treatment	T0	T1	T2
Charities' sub-sectors	n. (%)	n. (%)	n. (%)
Advocacy and Civil Rights	4 (4.94%)	1 (1.19%)	6 (4.55%)
Animal Rights, Welfare, and Services	3 (3.7%)	8 (9.52%)	7 (5.3%)
Children's and Family Services	0	4 (4.76%)	1 (0.76%)
Community Foundations	1 (1.23%)	0	0
Community and Housing Development	0	1 (1.19%)	5 (3.79%)
Development and Relief Services	7 (8.64%)	8 (9.52%)	14 (10.61%)
Diseases, Disorders, and Disciplines	10 (12.35%)	8 (9.52%)	19 (14.39%)
Environmental Protection and Conservation	5 (6.17%)	3 (3.57%)	3 (2.27%)
Food Banks, Food Pantries, and Food Distribution	0	1 (1.19%)	2 (1.52%)
Fundraising Organizations	4 (4.94%)	7 (8.33%)	6 (4.55%)
Homeless Services	1 (1.23%)	0	1 (0.76%)
Humanitarian Relief Supplies	2 (2.47%)	3 (3.57%)	3 (2.27%)
International Peace, Security, and Affairs	3 (3.7%)	0	4 (3.03%)
Libraries, Historical Societies and Landmark Preservation	1 (1.23%)	0	1 (0.76%)
Medical Research	3 (3.7%)	7 (8.33%)	5 (3.79%)
Multipurpose Human Service Organizations	6 (7.41%)	1 (1.19%)	9 (6.82%)
Museums	4 (4.94%)	3 (3.57%)	3 (2.27%)
Other Education Programs and Services	6 (7.41%)	5 (5.95%)	10 (7.58%)
Patient and Family Support	5 (6.17%)	1 (1.19%)	6 (4.55%)
Performing Arts	0	1 (1.19%)	1 (0.76%)
Public Broadcasting and Media	2 (2.47%)	0	0
Religious Activities	2 (2.47%)	6 (7.14%)	2 (1.52%)
Religious Media and Broadcasting	1 (1.23%)	0	1 (0.76%)
Research and Public Policy Institutions	0	1 (1.19%)	1 (0.76%)
Single Country Support Organizations	1 (1.23%)	4 (4.76%)	1 (0.76%)
Social Services	4 (4.94%)	6 (7.14%)	7 (5.3%)
Treatment and Prevention Services	1 (1.23%)	0	4 (3.03%)
Wildlife Conservation	3 (3.7%)	1 (1.19%)	2 (1.52%)
Youth Development, Shelter, and Crisis Services	1 (1.23%)	3 (3.57%)	6 (4.55%)
Zoos and Aquariums	1 (1.23%)	1 (1.19%)	2 (1.52%)
Total	81	84	132

Table A.3: List of charities selected by treatment

Treatment Charity's Name	T0 n.	T1 n.	T2 n.	Total n.
"I Have a Dream" Foundation	2	3	4	9
10,000 Degrees	2	0	2	4
100 Club of Arizona	0	0	1	1
1000 Friends of Florida	2	0	1	3
4 Paws for Ability	0	1	1	2
A Better Chance	1	0	1	2
A Gift for Teaching	0	0	2	2
A Kid Again	0	0	2	2
AAA Foundation for Traffic Safety	0	0	1	1
AARP Foundation	1	0	0	1
AAUW - American Association of University Women	0	0	1	1
ACCESS College Foundation	0	1	0	1
ACE Scholarships	0	0	2	2
AIDS Emergency Fund	0	1	1	2
AIDS Research Alliance	1	0	0	1
ALS Therapy Development Institute	0	0	1	1
ALSAC - St. Jude Children's Research Hospital	1	2	4	7
Abused Deaf Women's Advocacy Services	0	0	1	1
Action Against Hunger   ACF-USA	0	0	1	1
Action for Healthy Kids	0	0	1	1
Adopt A Pet.com	0	1	1	2
Adventure Unlimited	0	0	1	1
African Enterprise	0	1	0	1
African Wildlife Foundation	1	0	1	2
Africare	0	0	1	1
After-School All-Stars	0	0	1	1
Aid For Friends	0	1	0	1
Aid for Starving Children	1	2	2	5
Akron-Canton Regional Foodbank	0	1	0	1

Alex's Lemonade Stand Foundation	1	0	0	1
All Children's Hospital Foundation	2	0	0	2
Aloha United Way	0	0	1	1
Amazon Conservation Association	1	0	0	1
American Breast Cancer Foundation	2	0	1	3
American Cancer Society	1	1	3	5
American Diabetes Association	0	1	2	3
American Foundation For Children With AIDS	1	0	0	1
American Foundation for Disabled Children	1	0	0	1
American Friends of Nishmat	0	0	1	1
American Heart Association	2	2	0	4
American Institute for Cancer Research	0	1	0	1
American Lung Association of the Mid-Atlantic	1	0	1	2
American Red Cross	4	1	5	10
American Society for the Prevention of Cruelty to Animals	0	2	0	2
American Society for the Protection of Nature in Israel	0	1	0	1
American Youth Foundation	0	1	0	1
Amnesty International USA	0	0	1	1
Animal Friends	0	0	1	1
Animal Humane Society	2	2	0	4
Animal Rescue	0	1	1	2
Animal Rescue League of Iowa	0	1	0	1
Animal Welfare Society	0	0	1	1
Aquarium of the Pacific	1	0	0	1
Arlington Food Assistance Center	1	0	0	1
Army Emergency Relief	0	0	1	1
Arthur Ashe Youth Tennis and Education	1	0	0	1
Autism Research Institute	0	1	0	1
Autism Speaks	0	0	3	3
Big Brothers Big Sisters of America	0	1	0	1
Billy Graham Evangelistic Association	0	0	1	1
Books For Africa	0	1	0	1
Boy Scouts of America, National Capital Area Council	0	1	0	1
Breast Cancer Research Foundation	2	1	0	3

COSI Columbus	0	0	1	1
CURE Childhood Cancer	0	0	1	1
California Police Activities League	0	0	1	1
Cancer Research Institute	0	4	1	5
Catholic Charities Health and Human Services	0	1	0	1
Catholic Charities USA	0	1	0	1
Catholic Schools Foundation	0	1	0	1
Central Virginia Foodbank	0	0	1	1
Chesapeake Bay Foundation	1	1	0	2
Chesapeake Bay Maritime Museum	1	0	0	1
Chesapeake Bay Trust	1	0	0	1
Childcare Worldwide	0	0	1	1
Children Cancer Research Fund	0	1	0	1
Children in Crisis	0	2	0	2
Children's Hospital Foundation	0	0	2	2
Children's Hunger Fund	0	1	1	2
Children's Miracle Network	0	1	0	1
Children's Organ Transplant Association	0	0	1	1
Children's Rights	0	0	1	1
Children's Scholarship Fund	1	0	0	1
China Care Foundation	0	1	0	1
Citymeals-on-Wheels	0	1	0	1
Council for Secular Humanism	0	0	1	1
Cystic Fibrosis Research, Inc.	1	0	0	1
D.A.R.E. America	0	0	2	2
D.C. Bar Pro Bono Program	1	0	0	1
Dance/USA	0	1	0	1
Diabetes Research Institute Foundation	0	1	0	1
Doctors Without Borders, USA	2	0	0	2
Dogs for the Deaf	0	0	1	1
Engineering Ministries International	0	0	1	1
FDNY Foundation	0	0	1	1
Feed My Starving Children	0	0	1	1
Food For The Poor	0	0	1	1

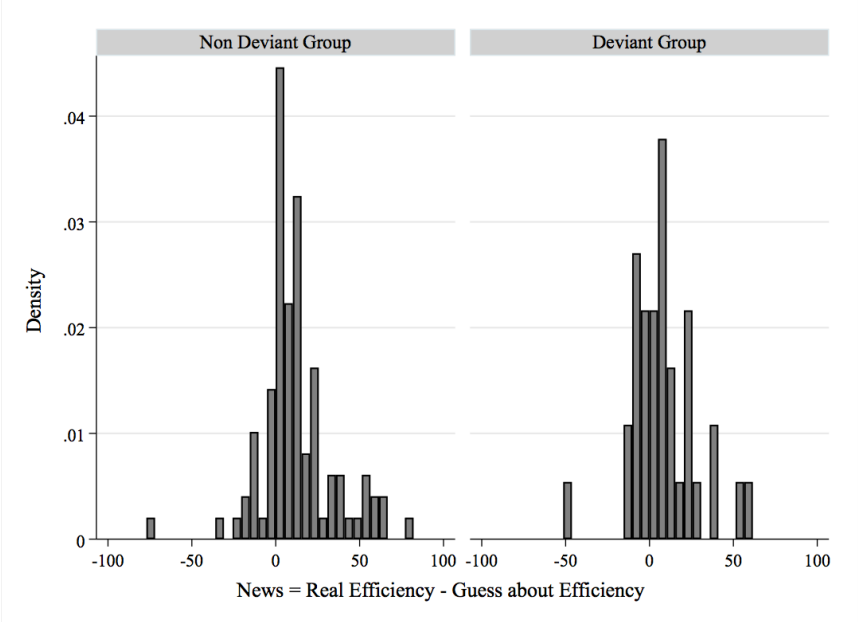
Food for the Hungry	1	0	0	1
Foodbank of Southeastern Virginia	0	0	1	1
Friends of the National Zoo	0	1	1	2
Fund for Armenian Relief	0	0	1	1
Futures Without Violence	0	0	1	1
Girl Scouts of the USA	0	0	1	1
Global Fund for Children	0	0	1	1
Guide Dogs for the Blind	0	1	0	1
HOPE International	0	1	0	1
Habitat for Humanity - New York City	0	0	1	1
Habitat for Humanity of Northern Virginia	0	1	2	3
Hawaii Food Bank	1	0	0	1
Heart for Africa	1	0	1	2
Hillel: The Foundation for Jewish Campus Life	1	0	0	1
Houston Zoo	0	0	1	1
Human Rights Campaign Foundation	0	0	1	1
Humane Society of Fairfax County	0	0	2	2
India Development and Relief Fund	0	1	0	1
Institute of International Education	0	0	1	1
InterVarsity Christian Fellowship/USA	0	1	0	1
International Children's Care	1	0	0	1
International Orthodox Christian Charities	0	1	0	1
Invisible Children	0	1	0	1
Islamic Relief USA	2	2	2	6
Juvenile Diabetes Research Foundation International	1	0	0	1
Kiddo	0	0	1	1
Kids in Crisis	0	0	1	1
Law Enforcement Education Program	1	0	1	2
Law Enforcement Legal Defense Fund	0	0	1	1
Link Media and Link TV	0	0	1	1
Love146	1	0	0	1
Lung Cancer Alliance	0	0	1	1
Magic Johnson Foundation	0	0	1	1
Make-A-Wish Foundation of America	3	1	2	6

Make-A-Wish Foundation of Greater Virginia	1	0	1	2
Make-A-Wish Foundation of Metro New York	1	0	0	1
Make-A-Wish International	0	0	1	1
Mary's Center for Maternal and Child Care	0	1	0	1
Mission Without Borders - USA	0	0	1	1
Mothers Against Drunk Driving	0	0	1	1
Multiple Sclerosis Association of America	0	1	0	1
Muscular Dystrophy Association	0	0	2	2
Muslim American Society	1	1	1	3
NPR	2	0	0	2
NRA Special Contribution Fund, Whittington Center	1	0	0	1
Naismith Memorial Basketball Hall of Fame	1	0	0	1
National Alliance to End Homelessness	0	0	1	1
National Association for the Advancement of Colored People	0	0	1	1
National Council on US-Arab Relations	1	0	0	1
National Foundation for Advancement in the Arts	0	1	0	1
National Foundation for Infectious Diseases	0	1	0	1
National Jewish Health	0	0	1	1
National Law Enforcement Officers Memorial Fund	1	0	1	2
Neurosciences Research Foundation	0	0	1	1
North American Conference on Ethiopian Jewry	0	0	1	1
Organic Farming Research Foundation	0	1	0	1
Palestine Children's Relief Fund	0	1	0	1
Pennsylvania SPCA	1	0	0	1
Planned Parenthood Federation of America	1	0	0	1
Planned Parenthood of Metropolitan Washington, DC	0	0	1	1
Pratham USA	1	0	0	1
Prevent Child Abuse America	0	1	0	1
RBC Ministries	1	0	0	1
Rainforest Alliance	0	0	1	1
Ronald McDonald House Charities	1	1	0	2
Samaritan's Purse	1	0	0	1
Save the Children	0	2	0	2
Second Amendment Foundation	0	1	0	1



Shelter for Abused Women & Children	0	1	0	1
Shelter for the Homeless	1	0	0	1
Smithsonian Institution	2	1	0	3
South Florida Wildlife Center	0	1	0	1
Special Olympics Virginia	0	0	1	1
Stop Hunger Now	0	0	1	1
Susan G. Komen for the Cure	1	0	1	2
Teach For America	0	0	1	1
The Leukemia & Lymphoma Society	0	0	1	1
The National Italian American Foundation	1	0	0	1
The Nature Conservancy	0	1	0	1
USO	0	0	1	1
United States Fund for UNICEF	1	0	0	1
United States Golf Association	1	0	0	1
Uniting Against Lung Cancer	0	0	1	1
Virginia Beach SPCA	0	1	0	1
Warm Blankets Orphan Care International	0	1	0	1
Washington Animal Rescue League	0	0	1	1
Washington National Opera	0	0	1	1
Water.org	0	0	1	1
Women Thrive Worldwide	0	0	1	1
World Emergency Relief	0	1	0	1
World Wildlife Fund	2	1	1	4
Wounded Warrior Project	1	0	0	1
YMCA of Greater Grand Rapids	0	0	1	1
Young Life	0	2	0	2
charity: water	0	0	1	1
endPoverty.org	0	1	1	2
Total	81	84	132	297

Figure A.1: Distribution of news for subjects in the Non-Deviant Group and Deviant Group in treatment T2



## Appendix B

In this section we derive conditions for an increase or decrease of individual giving in response to an increase in quality using the implicit function theorem. For simplicity we assume that donors have homogeneous preferences and we ignore pure altruists' preferences over  $G_{-i}$  (the results do not qualitatively change). A donor solves the following simple maximization problem:

$$\begin{aligned} \max U_i &= \nu(c) + u(q \cdot g_i) \\ \text{s.t. } M &= c + g \end{aligned} \tag{6}$$

We assume that both  $\nu$  and  $u$  are strictly increasing and concave functions. Taking the first order conditions with respect to  $g_i$  we obtain:

$$\frac{\partial U}{\partial g_i} = -\nu'(m - g) + qu'(q \cdot g_i) = 0 \tag{7}$$

If we implicitly differentiate the latter with respect to  $q$  we obtain:

$$+\nu''(m - g) \cdot \frac{\partial g_i}{\partial q} + u'(q \cdot g) + q \cdot u''(q \cdot g) \cdot [g + q \cdot \frac{\partial g_i}{\partial q}] = 0 \tag{8}$$

If we rearrange equation 7 we obtain:

$$\frac{\partial g_i}{\partial q} = \frac{-u'(q \cdot g) - q \cdot u''(q \cdot g) \cdot g}{\nu''(m - g) + q \cdot u''(q \cdot g) \cdot q} \tag{9}$$

The denominator of equation 8 is always negative. Therefore giving will increase in response to increases in  $q$  ( $\frac{\partial g_i}{\partial q} > 0$ ) if  $-u'(q \cdot g) - q \cdot u''(q \cdot g) \cdot g < 0$ . Giving will instead decrease in response to an increase in  $q$  if  $-u'(q \cdot g) - q \cdot u''(q \cdot g) \cdot g > 0$ .